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THE UNIVERSITY OF ALBERTA

GROUP COVERT SENSITIZATION WITH CIGARETTE SMOKERS

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Group covert sensizitation with cigarette smokers", submitted by Yvonne Ethel Walsh in partial fulfilment of the requirements for the degree of Master of Education.

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ABSTRACT

The present study an investigation of the effectiveness of covert sensitization in the treatment of cigarette smoking. Covert is used because neither the undesirable stimulus nor the aversive stimulus is actually presented, but is in an imaginary scene. Sensitization is used because the purpose of the procedure is to build up an avoidance response to an undesirable stimulus.

The study was conducted during 12 sessions over five weeks with a three-group repeated-measures design with 24 subjects. The two treatment groups varied in the hierarchical presentation of the situational aversive scenes, whereas the third group acted as a control for the effect of counting daily cigarette intake.

The findings of this study resulted in a significant difference between the treatment groups and the control group as displayed by a two-way analysis of variance: $F(2, 23) = 4.66$, $p = .02$ for the treatment variable and $F(8, 84) = 6.33$, $p = .00$ for the time variable. A Newman Heuls test for multiple comparisons on the treatment variable resulted in significant differences (.05 level) between Treatment Group 1 and Control Group 3 and approaching significance between Treatment Group 2 and Control Group 3. There was no significant difference found between the two treatment groups.

From these findings and analyses it was concluded that Covert Sensitization is an effective technique for the treatment of cigarette smoking. There was no support, however, for the hypothesis that one type of hierarchical presentation was more effective than the other, but further research in this area is recommended.

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CHAPTER I

INTRODUCTION

> WARNING: Health and Welfare Canada advises that danger to health increases with amount smoked - avoid inhaling.

So reads the side of every cigarette package sold in Canada. Since this warning does not act as a deterrant to those who smoke cigarettes, perhaps the following passage might produce some results:

> You are sitting at the table after a meal, your family is all around you and you are enjoying a cup of tea. You start to reach for your cigarettes and as you do you feel sick to your stomach like you're going to vomit. You touch your packet and a bitter taste wells up into your mouth. When you take a cigarette out of the packet, chunks of your meal come into your mouth. You open your mouth to put in the cigarette and you puke all over the cigarette and your hand. The cigarette is green and soggy from the vomit and there is a nauseating smell coming from it. You continue to puke all over yourself and the table. Your family is horrified. You get up from the table and you begin feeling better. As you turn away from the table and the cigarettes the air smells fresher. You go to the bathroom to wash up and you feel really good being away from the cigarettes and the vomit.

Cigarette smoking, like many other behaviors, is learned because of the positive reinforcement received for indulging in it. These reinforcers may be intrinsic or extrinsic, but are sufficiently powerful to maintain the repetitive occurrance of a smoking response.

A technique to unlearn the behavior is necessary if a person desires to "kick the habit". One such technique is covert sensitization, which is the conditioning of a negative (aversive) response to a stimulus that previously elicited a positive response.

Covert sensitization, originally proposed by Cautela (1966), has been shown to be effective in the treatment of cigarette smoking as

evidenced in the studies by Lawson and May (1970), Cautela (1970), Wagner and Bragg (1970), and Gordon and Hall (1973).

A brief description of the sequential order of the technique first formulated by Cautela and expanded upon in a subsequent study by the same author follows:

1. An extensive history is taken which involves the where, why, how and what of the target behavior. As much information as possible is obtained and questionnaires can be utilized (i.e., Eating Patterns Questionnaire, Wollersheim, 1970).

2. Identification of what is aversive to the client, which could include nauseating situations, fear provoking objects or embarrassing situations. Although Cautela originally used nauseating scenes, latter studies utilized more fear provoking scenes (Smith & Gregory, 1976).

3. The therapist's role is then to generate scenes for the client to imagine which combine the problem behavior, relevant stimuli and aversive aspects.

4. The rationale for the development of the treatment is discussed with the client. The behavior has been learned and the way to eliminate it is to unlearn it. This is done by associating the pleasurable object with an unpleasant stimulus. According to Rim and Masters (1974), the problem behavior has three characteristics: it is usually highly motivated, it is intrinsically reinforcing, and it is generally elicited powerfully by stimuli.

5. The client is taught a technique of relaxation, thereby enabling him to relax between presentation of scenes and in anxious situations. This relaxation segment usually involves three or four sessions, and the

client is requested to practise at home between sessions.

6. Sessions involving the presentation of scenes follows the relaxation segment. These scenes cover most of the applicable situations where the behavior is indulged in and are presented in a hierarchical order.

7. There are two types of aversive scenes which constitute the hierarchy: aversive relief and averted. Each of these two types of scenes are presented in equal numbers (10 each per session), and the client is again requested to practise at home between sessions.

8. The treatment is continued until the desired end result is achieved, which in most cases is the cessation of the behavior.

In summary, covert sensitization involves sessions which are used to gather information about the individual and the target behavior, sessions for teaching relaxation, and finally sessions which involve the presentation of scenes.

This presentation of scenes is one of the more important aspects in this technique. Each scene consists of specific situations in which the subject indulges in the target behavior to a greater or lesser degree. For example, a smoker consumes more cigarettes at a party and fewer cigarettes in the morning before breakfast. Each situation with its corresponding aversive element is then put into a hierarchical order.

There are two types of hierarchies utilized by investigators of covert sensitization. The type that has an order that descends from a high frequency response situation to a low frequency response situation is the first type. The second is the opposite, that of an order from a low frequency situation to a high frequency situation.

The rationale for each of these hierarchical models of presentation is the hierarchy which begins with the high frequency response being paired with a negative reinforcing stimuli and consequently a bond is formed. Once this new bond is strongly internalized, the other, less frequent situations are more readily sensitized. However, if the least indulged in situation begins the hierarchy, there is more initial success and therefore more incentive to continue treatment.

The Problem

It was the purpose of this study to test empirically if covert sensitization is an effective treatment for the reduction of cigarette smoking during a period of five weeks and 12 sessions of intervention.

A second interest was to determine if hierarchical methods of scene presentation would produce a significant difference in cigarette consumption between Treatment Group 1 and Treatment Group 2.

CHAPTER II

A REVIEW OF THE LITERATURE

It is the purpose of this chapter to present an overview of covert sensitization while discussing it as a type of aversive therapy. A discussion of the theoretical rationale behind covert sensitization as an effective treatment is included, as is a presentation of procedural decisions an investigator must consider before using this technique. The hypotheses which were tested by this study are included at the end of the chapter.

According to Wolpe (1973), "aversive therapy is the administering of an aversive stimulus to inhibit an unwanted response thereby diminishing its habit strength". Aversive therapy is simply the presentation of a strong stimulus to an undesired response. This strong aversive stimulus can be a drug, electrical shock or an aversive scene. Besides the stimulus eliciting an avoidance response, it will also inhibit the undesired emotional response. When this inhibition takes place, a weakening of the behavior results, and a bond is established between the aversive stimulus and the undesired response.

Covert sensitization is one specific type of aversive therapy. The term "covert" is used because neither the undesirable stimulus nor the aversive stimulus is actually presented, but is in an imaginary scene. Sensitization is used because the purpose of the procedure is to build up an avoidance response to the undesirable stimuli.

J. R. Cautela (1966), originator of covert sensitization as a technique in the treatment of "maladaptive approach responses", introduced

his technique in a study involving the treatment of two female clients, one an alcoholic and the other overweight. This report included an extensive description of the technique which was expanded upon in a subsequent article in 1967.

The studies by later investigators followed Cautela's technique with or without adaptations to determine the theoretical rationale behind the treatment and/or to ascertain its effectiveness on a wide variety of behaviors.

Some of the behaviors which have been treated by covert sensitization are obesity (Janda & Rim, 1972), smoking (Sipich, Russell, & Tobias, 1974), alcoholism (Ashem & Donner, 1968), petrol sniffing (Kolvin, 1967), homosexuality (Curtis & Presley, 1972), psychosis (Moser, 1974), heroin addiction (Wisocki, 1973), and sadistic fantasy (Davison, 1968).

Theoretical Issues

It is the objective of this section to discuss the second purpose for which investigators utilized Cautela's technique. There are two general issues surrounding the rationale for the effectiveness of covert sensitization. One is whether pairing is a crucial aspect or if motivational properties play a more influential role. Secondly, if pairing is important for an effective outcome, under which conditioning paradigm is it operating?

According to Cautela (1966), the purpose of covert sensitization is to produce an avoidance response to the undesirable stimuli. This avoidance response is brought about by the pairing of the noxious stimuli and the behavior, which is presented in imagination only.

Concerning aversive imagery, Weiner (1965) found that both imagining aversive consequences and being presented with actual aversive consequences reduced the response rate more than a condition involving no consequences. Therefore it was concluded that the noxious stimulus need not be applied externally but can be covert.

In summary, Cautela is of the opinion that covert sensitization is an effective technique which can be used effectively, and the most crucial aspect of its effectiveness is the pairing which is in imagery scenes.

There are, however, queries concerning the effectiveness of pairing. Some investigators support Cautela's belief in its effectiveness, whereas others propose alternative possibilities.

In a study of overweight females, Foreyt and Hagen (1973) compared a placebo group and an aversive group. The aversive group was presented with scenes which paired the approach of certain foods to the mouth with an aversive consequence of vomiting. The placebo group scenes involved the pairing of the food to the mouth with "warm" thoughts. They found, in conclusion, that neither group showed a significant weight loss and consequently felt that covert sensitization could be the result of attention and suggestion and not the aversive pairing.

Barrett and Sachs (1974) support this finding and suggest that the effectiveness of covert sensitization lies along motivational lines, such as cognitive dissonance and not parameters related to conditioning.

A study into the effectiveness of covert sensitization treatment of smokers performed by Lawson and May (1970) purports that the reduction in cigarette smoking was due in part to factors other than those explicit in the treatment.

In contrast, four studies (Ashem & Donner, 1968; Barlow et al., 1969, 1972; Manno & Marsten, 1972) dispute the motivational proposition and lend support to Cautela's original hypothesis of pairing as being the reason for effective treatment. Barlow et al. (1972) state quite decisively that the pairing of a noxious scene with the target behavior is the most crucial procedure in covert sensitization.

It appears that there is no conclusive evidence to support either the "pairing" or the "motivational" theories for the effectiveness of treatment. Let us assume, however, that the pairing is the necessary element in covert sensitization. The question arises under which paradigm the pairing operates. Is it a classical conditioning paradigm or an operant conditioning paradigm?

It is essential to first define conditioning. According to McLaughlin (1971), "conditioning is simply a modification of behavior in which the capacity to elicit a response is transferred from one stimulus to another" (p. 56). It can be distinguished from maturation since it results from experience and not simply from the development of the organism.

Classical conditioning was first investigated by Pavlov in 1927. His study on the conditioned reflex in dogs is of historical significance in psychology and hence the paradigm he employed is referred to as "classical".

In this paradigm, an unconditioned stimulus produces an unconditioned response. A conditioning procedure is set up so a conditioned stimulus is paired with the unconditioned stimulus to elicit the unconditioned response. Upon completion of conditioning, the conditioned stimulus

will then elicit a conditioned response.

In the case of cigarette smoking and covert sensitization, the unconditioned stimulus is the aversive scene, the unconditioned response is vomiting, the conditioned stimulus is the normal smoking situation, and the conditioned response is the avoidance of smoking upon completion of a conditioning procedure.

There are two main studies that support this classical conditioning framework: Cautela's original study (1966) and a study of alcoholics performed by Ashem and Donner (1968). The purpose of the second study was to determine which is a more effective procedure, forward classical (unconditioned stimulus follows the conditioned stimulus) or backward classical (unconditioned stimulus precedes the conditioned stimulus) conditioning.

Ashem and Donner contest that Cautela's work utilizes a backward paradigm which they found was not as effective because of the precedence of the conditioned stimulus. They concluded, then, that covert sensitization would be more effective if a forward classical conditioning procedure was utilized.

No other studies allude to a specific classical conditioning paradigm operating in covert sensitization, but several studies do support an operant conditioning paradigm.

In operant conditioning, as distinguished from classical conditioning, the unconditioned stimulus follows some predetermined behavior when it occurs spontaneously. The probability of a response is high in the presence of certain events and is low under other conditions and is under the control of discriminative stimuli.

In smoking, the operant response is the act of smoking, and the discriminative stimuli are situations surrounding smoking (i.e., entertaining at a party). The response of smoking, in the presence of discriminative stimuli, is positively reinforced in some way such as a perceived reduction in anxiety or a good feeling of being "one of the crowd".

The purpose of covert sensitization, as viewed under an operant paradigm, is to negatively reinforce the response of smoking rather than positively reinforce it. This is viewed as punishment because of the application of a negative reinforcement to an operant response. After continual pairing, an escape response is then connected with smoking.

Covert sensitization utilizes another powerful reinforcer which is positive. In the aversive relief scenes, the subject turns away from the nauseating situation and immediately begins to feel better which is a positive consequence. In the averted scenes, the subject is positively reinforced for refusing to smoke and therefore avoid the negative consequences of the scene.

In later studies, Cautela (1970, 1971, 1973) supports an operant conditioning explanation of covert sensitization and dismisses the classical hypothesis. In a study of smokers, Cautela (1970) not only suggests an operant paradigm but also refutes the procedure as being avoidance and supports an escape response explanation. This escape response procedure is supported in a study performed by Manno and Marsten (1972).

In summary, covert sensitization was originally believed to be operating in a classical framework. With later studies and further

research, it does appear that there is unequivocal support for an operant conditioning explanation and more specifically an escape procedure.

Methodological Issues

Before an investigator utilizes the technique of covert sensitization, several decisions concerning the methodology should be resolved. This section will discuss issues which result primarily from a decision to perform an empirical as opposed to a clinical study.

Cautela (1970) makes an interesting note on the differences between empirical and clinical studies:

> In empirical studies employing covert sensitization, it has been customary to employ a relatively small number of sessions. In clinical practice, covert sensitization is employed until the frequency of the maladaptive behavior is reduced to zero. The continuation of the covert sensitization procedure after the response is eliminated is more apt to ensure less likelihood of reconditioning.

This suggests several facets of research. In order to make generalizations to the population at large from an experimental sample, the size of the sample must be statistically large. This large sample size necessitates two procedural decisions: how long should the treatment continue, and should group or individual work be performed?

Cautela (1970), as mentioned, suggests termination to follow a period of time after the target behavior is zero. If an investigator were to make such a contract with 20 to 40 subjects, the study could be indeterminable in length. It is therefore customary in group treatment to set up the design of the study to involve a predetermined number of sessions over a set period of time (Barrett & Sachs, 1974; Foreyt & Hagen, 1973).

Much of the literature on covert sensitization is case studies which involve individual treatment of a behavior (Segal & Sims, 1972; Barlow et al., 1972; Kolvin, 1967). These studies are clinical in nature and consequently contain small samples. If, however, the purpose of the study is to empirically test hypotheses for generalization, individual treatment is a lengthy and impractical approach.

Should the investigator decide to use group covert sensitization, several problems arise, the most paramount being that of the specificity of this technique. Cautela (1966) suggests that the treatment is specific and that after the subject has been sensitized towards an object, it is easier to sensitize towards other objects. But in summary he states that "the habit strength is not great enough to raise the reaction potential above the excitatory threshold and therefore minimal generalization occurred".

Secondly, one cannot ignore the fact that there are individual differences in human beings. Bernstein (1969) recognizes that "different individuals smoke for different reasons, and that the same individual smokes for different reasons at different times".

It is an impossibility to refute individual differences among subjects, nor is it possible to ignore the undisputed specificity of the treatment. An investigator should, however, attempt to decrease the effects of each of these in a group setting.

In order to diminish some of the effects of individuality and specificity, it is necessary to do a careful behavior assessment of each individual in relation to the situation surrounding the target behavior and the aversive aspects in each subject's life.

A technique which can give an excellent behavioral assessment is the utilization of questionnaires in the initial session. Several investigators have used this approach in their studies (Wagner & Bragg, 1970; Manno & Marsten, 1972; Janda & Rim, 1972; Foreyt & Hagen, 1973) and found it a very useful technique.

These questionnaires can be used to obtain information about the subject's personal history, the situation surrounding the behavior, and information concerning aversive aspects.

Once this information is gathered, it is then utilized in the construction of the scenes. There are two components to each scene: the aversive (negative reinforcement) part and the situational information.

The present author categorizes three types of scenes: Aversive, Aversive Relief, and Averted. Cautela (1966) uses only Aversive and Aversive Relief scenes and presents these in equal numbers per session. Since latter investigators used a similar technique, they also employed only these two scenes in equal numbers (Wagner & Bragg, 1970; Ashem & Donner, 1968; Maletzky & George, 1973). There were some investigators who utilized both the Aversive Relief and Averted (Anant, 1968; Manno & Marsten, 1972), but none who used all three.

Aversive scenes involve only the negative reinforcing component, whereas the Aversive Relief has both positive and negative reinforcement. The negative reinforcement is paired with the attempt to smoke; the positive aspect is the turning away from the aversive consequences and the cigarettes.

Averted has both positive and negative reinforcement, but the negative aspects (i.e., vomiting) is presented only in its initial stages

(begin to feel sick) and then the subject is positively reinforced for not opening the package of cigarettes, the symptoms disappear, and a good feeling occurs (Appendix F).

The present author suggests that all three of these types of scenes be incorporated into the treatment. She also suggests that the Aversive scene be presented more frequently in the beginning sessions and decreasing in frequency. The use of Aversive Relief and Averted should be used in equal amounts throughout the treatment.

The purpose of presenting a greater number of Aversive scenes initially is because of their entirely negative reinforcing nature. This negative reinforcement insures that a bonding is formed between a target behavior and the aversive aspect, thereby decreasing the positive reinforcement of the target response.

As the sessions continue, there is less need for the solely negative reinforcement and more positive reinforcement can therefore be used because of the weakening of the response strength.

Neither Cautela's technique nor the one suggested by the author has been investigated in the literature. Suffice it to say that the present author does not dispute Cautela's use of the two types of scenes, but rather that it would be more successful to use all three in the aforementioned technique.

The second component of the scenes is the situation where the client indulges in the behavior, either to a greater or lesser degree, depending on the situation.

There are two main ways of presenting these scenes in a hierarchical manner. Cautela (1966) recommends that the hierarchy begin with scenes

in which the client has a high frequency response and descends down the hierarchy to a low frequency response situation. The other means of hierarchical presentation is the opposite: the less frequent response situation begins the hierarchy and the most frequent response ends it.

Cautela (1967) suggests that there is a rationale for each of these methods of presentation. The hierarchy which begins with the most frequent situation means that it is paired with a negatively reinforcing event, resulting in the development of a bond. Once this bond is strongly internalized, then the other, less frequent situations are more readily sensitized. However, if the least indulged in situation begins the hierarchy, there is more initial success and therefore more incentive to continue therapy.

Cautela utilizes the hierarchy beginning with the high frequency situation and does not give the rationale for choosing this method over the other hierarchical presentation. Since investigators follow his technique, they also used the highest to lowest frequency hierarchy.

There have been no studies performed in this area which test the effectiveness of each of the modes of presentation. It was felt necessary by the author to ascertain which hierarchical presentation was more effective in an empirical study with smokers.

Hypotheses

Hypothesis 1

There will be a significant difference between the control group and the treatment groups for the change in cigarette intake over the five-week period.

Hypothesis 2

There will be a significant difference between Treatment Group 1 and Treatment Group 2 for the change in cigarette intake over the five-week period.

CHAPTER III

METHOD

In this chapter the author discusses the design for treatment and the methods used to determine the effectiveness of the hierarchical presentation of scenes. The sample used is described, as are the instruments and the research design. In the final section, a description of the treatment program is given.

Sample

The sample consisted of 30 subjects, six of whom did not complete the study. Four ways this sample was solicited were: addressing classes, advertising with posters, advertising in the daily newspaper, and through personal contact with the author.

The author obtained permission to address six Spring Session courses at the University of Alberta to explain the nature of the study and to request volunteers. The classes addressed were: three Educational Psychology, one Educational Foundations, one Introductory Psychology, and one Introductory Sociology. Seventeen subjects were obtained in this manner.

Twelve posters were hung at the most frequented notice boards throughout the University of Alberta campus. This solicitation resulted in five subjects.

On Saturday, May 8, 1976 the Edmonton Journal printed an advertisement for this study in the Classified Ads section; solicitation of one subject resulted.

The other seven subjects were personally solicited by the author.

Each subject contacted the author either personally or by telephone. The subject's name, telephone number and available times were recorded.

The subjects were then arranged into groups according to time available, which was 1:00 p.m. or 7:00 p.m., Monday, Tuesday and Wednesday.. Those subjects who could not attend at these times became the control group. They were told treatment would be available upon completion of the present study.

A description of each of the three groups is presented in Table 1.

Table 1

Description of Groups

Group	Age		Years Smoked		Occupation
	Range	Mean	Range	Mean	
Treatment group 1 5 males 3 females (2 dropouts)	17-33	25.25	3-16	9.5	4 students 1 cement mixer 1 crane operator 1 restaurant manager 1 accountant
Treatment group 2 6 males 2 females (1 dropout)	23-45	32.12	4-27	14.0	2 graduate students 1 Phys Ed director 1 medical illustrator 4 undergrad students
Control group	26-55	35.47	5-30	16.4	2 housewives 2 graduate students 2 undergrad students 1 accountant 1 secretary

The flipping of a coin decided which treatment group would be the lowest to highest frequency group and which would be the highest to lowest group. Group 1 (evening) was subsequently determined to be the highest to lowest, and therefore Group 2 (afternoon) was the lowest to highest group.

Research Design

The study was conducted during 12 sessions over five weeks. A three group, repeated measures design was used and contact with each group is described below.

Subjects in the control group were met individually to instruct them in the method of counting daily cigarette intake. They were given a five-week supply of the Daily Cigarette Intake Form and were requested to continue counting for the full five weeks. Telephone contact was made with each subject twice during the duration of the study.

The afternoon and evening treatment groups met in the Kiva of the Education Building at the University of Alberta at 1:00 p.m. and 7:00 p.m., Monday, Tuesday and Wednesday, respectively. Each group was seen for a total of 12 sessions, each session taking 30 to 60 minutes.

The initial contact session, the three relaxation sessions and the final session were similar for both groups. The difference in treatment between the groups began in session 5 and continued through to session 11.

Each subject in the treatment groups was requested to complete the Daily Cigarette Intake Form. At the beginning of each week the treatment groups passed in the previous week's supply of forms and were given another weekly booklet to complete. They recorded their intake for the same five-

week period as the control group. A schedule of sessions is given in Table 2.

Table 2

Schedule for Treatment and Collection of Data Sheets

Week	Sessions		
Week 1	1	Initial contact	Baseline
Week 2	2,* 3, 4	Relaxation	1, 2, 3
Week 3	5,* 6, 7	Covert sensitization**	1, 2, 3
Week 4	8,* 9, 10, 11	Covert sensitization	4, 5, 6, 7
Week 5	12*	Final session	Baseline

*Weekly tally sheets collected
**Variation in treatment begins for Groups 1 and 2

Instruments

It was decided that this study should utilize questionnaires to obtain demographic data, as well as situational and aversive information. There were three questionnaires completed by each subject of the two treatment groups at the initial contact session. The fourth questionnaire was completed by all three groups.

There is no study in covert sensitization which suggests a questionnaire specific to smoking. It was therefore decided by the author to construct such a survey. Items questioning the history of the behavior, the number of cigarettes smoked per day, and situations where subjects smoked were included, and the completed form was subsequently called Walsh's General

Cigarette Survey (Appendix D).

Lazarus, in his book on behavior therapy, includes an example of a personal history questionnaire, the purpose of which is to gather information about the client's personal life. The present author felt that this information might have been important to the present study and therefore adapted this questionnaire to be utilized in the present study. The reason it was adapted was that some items on the original questionnaire were neither pertinent to smoking nor this study and these items were therefore eliminated (Appendix B).

The third instrument used in this study was the Daily Cigarette Intake Form. It was also constructed by the author for use by the subjects in order to count daily cigarette consumption. The primary function was to monitor the situations where their behavior occurred or a greater or lesser frequency, thereby giving information for the construction of scenes. The control group was requested to use this same form so as to have consistency between groups.(Appendix A).

Once information is gathered about the situation, it is then necessary to determine the aversive aspects in the subject's life. Individual interviews were not utilized for this purpose because of the time involved. It was subsequently decided to use Wolpe's Fear Survey. Upon close surveillance of this survey, several items were considered not pertinent because of the difficulty of incorporating them into scenes and they were consequently eliminated (Appendix C).

Treatment Program

In this section the objectives and purposes of each session will be discussed, followed by a chronological description of the events of that session which permitted the objectives to be met.

Session 1. Initial contact

The objectives and purposes of this meeting were to introduce each member of the group, to obtain information about the individuals and their smoking habits, to determine what was aversive, to describe the habit of cigarette smoking in a behavioral context, to describe the treatment and its rationale, and finally to instruct the groups in the method of counting their daily cigarette intake.

Events

1. Completion of the Fear Inventory, Walsh's General Cigarette Survey and the Personal History Questionnaire was performed first so that the following events would not bias the answers.

2. Each subject introduced himself/herself and stated how long they had smoked, why they wanted to quit, whether there was someone else reinforcing their quitting, and the situation where they smoked the most and the least.

3. The author gave a behavioral description of smoking as being a response which has been learned and which has positively reinforcing qualities. The rationale for treatment, therefore, was to change the positive aspect of smoking into a negative or aversive aspect.

4. The subjects were then instructed to begin each day with a full package of cigarettes; if they smoked more than one package, they were

to begin with two full packages. A running count was to be kept on how many they gave away and how many cigarettes they "bummed" from others.

5. The number of cigarettes smoked and specified situations were to be filled in on the Daily Cigarette Intake Form at convenient time intervals throughout the day. This technique of counting was also that used by the control group.

6. A booklet containing a one-week supply of forms was given to each subject. Any questions or doubts were answered and discussed.

7. There was no further contact with these groups for a subsequent one-week period.

Sessions 2-4. Relaxation segment

The primary objective of these sessions was the instruction of the client in the technique of relaxation. A progressive relaxation technique was used for the three sessions.

Events

1. The first task of session 2 (only) was to collect the previous week's tally forms and the passing out of the following weekly booklet.

2. Subjects were then told that the following sessions would involve learning relaxation.

3. Subjects were asked to get into a comfortable position on the carpeted floor. When they felt completely comfortable, they were to indicate so by raising their right index finger.

4. Once the majority of subjects indicated they were comfortable, a tape which contained a relaxation and an imagery sequence was played (Appendix E).

5. Upon completion of the tape, the purposes of learning relaxation were discussed, the purpose being to assist in imagining the scenes and to be utilized as a technique for the decrement of tension. Difficulties with any sequence of the tape were discussed.

6. The subjects were requested to practise at home once a day between sessions. At the end of session 4, those who requested it were given a cassette tape of the relaxation technique.

7. In closing, the subjects were requested to give up one cigarette a day (non-cumulative) which was one they felt they really did not need. The rationale for this was to make them more consciously aware of quitting.

Sessions 5-11. Covert sensitization segment

The overall objective of these sessions was to assist the client to terminate smoking. More specifically, the purpose was to pair the positively reinforcing behavior with aversive scenes, thereby developing an escape behavior to smoking.

Events

1. Sessions 5 and 8 began with the collection of the previous week's tally sheets and the passing out of the following weekly booklet.

2. The first session for each group (session 5) in this segment involved a brief description of what the following seven sessions would involve. The rationale for covert sensitization was stated again.

3. The subjects were asked to get in a comfortable position on the floor and get as relaxed as they possibly could. They indicated relaxation by the raising of their right index finger.

4. Since the purpose of this study was to determine if there was any difference between groups due to the hierarchical presentation of the

scenes, separate tapes were recorded and played to each group.

The tapes consisted of scenes constructed by the author utilizing the information obtained from the questionnaires and general discussion.

The method of constructing the scenes involved first a determination of the most common smoking situations. This information was obtained in two ways: by the use of Walsh's General Cigarette Survey and by reviewing the first week's tally sheets.

In total, there were nine situations which covered most of the areas where each individual smoked and were common to both groups. These situations were then put in a high to low frequency order for each group and a compromise order between the two groups was determined. This information is presented in Table 3.

Table 3

Ordered Smoking Environments
(listed in order of decreasing frequency)

Order of Presentation		
Group 1	Group 2	Situation
9	1	Drinking in the pub
8	2	At a party, entertaining
7	3	In the evening at home
6	4	After supper (evening meal)
5	5	During coffee break
4	6	During work or studying
3	7	Driving in a car
2	8	Before lunch or supper
1	9	In the morning before breakfast

The second task in the construction of the scenes was the identification of aversive aspects in each of the subject's repertoires. This information was obtained from the Fear Inventory and from the Personal History Questionnaire (Part 2).

Each individual's fears or dislikes were entered on a group tally form; only those that registered a fair amount, much, and very much were included.

A group total for each item was calculated and fears were ordered from most to least common. Again a compromise between the two groups was determined and the result was seven aversive aspects to include in the scenes. These were: mice, maggots, spiders, bugs (larvae and eggs), vomit, feces and urine, and ridicule and embarrassment.

The third and final part of construction involved pairing the nine smoking environments with the seven aversive aspects into a coherent, clear, imaginable scene.

Each situation had three types of scenes: Aversive, Aversive Relief and Averted (Appendix F).

In total, then, each group received 126 scenes over the seven sessions: 52 Aversive, 37 Aversive Relief, and 37 Averted. A summary of the situations, types of scenes and totals is presented in Table 4.

The rationale for using this mode of presentation has been discussed previously in Chapter II.

5. Upon completion of the tape, a discussion of how each subject was able to imagine the scenes ensued. Any difficulties or problems were discussed.

6. The subjects were requested to practise the scenes daily at home.

Table 4

Summary of Scenes Presented to Each Group

Situation	Aversive		Aversive Relief		Averted		Totals	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
At pub	9	3	4	4	4	4	17	11
At party	8	3	4	4	4	4	16	11
In evening	8	4	4	4	4	4	16	12
After supper	6	5	5	4	4	4	15	15
During break	6	6	4	4	5	5	15	15
Working/studying	5	6	4	5	4	4	12	16
In a car	4	8	4	4	4	4	12	16
Before a meal	3	8	4	4	4	4	11	16
Before breakfast	3	9	4	4	4	4	11	17
Totals	52		37		37		126	

They were also requested to practise imagining the scenes in vivo if such an opportunity arose.

7. In session 11, both groups were given a weekly booklet of tally forms for the final baseline count. During this week there was no contact with the author.

Session 12. Final session

The purpose of this session was to collect the final tally sheets from the two treatment groups and to bring things to a close. Those subjects who expressed an interest were given an individual tape incorporating scenes which the subject felt would be most effective for himself.

In finishing, the author expressed her gratitude for the co-operation and participation of the subjects and wished them luck on continuance to quit smoking.

In summary, the treatment program consisted of 12 sessions: one initial contact session, three relaxation sessions, seven covert sensitization sessions, and one final session over a period of five weeks. During weeks two and three the treatment groups met three times a week, and in week four they met four times.

Each subject of the control group was met individually again for the final session. The tally sheets were collected and each one was also thanked for their co-operation. An interesting note, however, was that not one of the control subjects wished to receive the treatment as was promised in the beginning.

CHAPTER IV

ANALYSES AND FINDINGS

In this chapter the statistical analyses and findings will be discussed which either lend support for or against the presented hypotheses. A summary of the conclusions which can be drawn from the findings and the analyses are included in closing. For all data analyses included in this chapter, the level of significance chosen was the .05 level.

Hypotheses

Hypothesis 1

There will be a significant difference between the control group and the treatment groups for the change in cigarette intake over the five-week period.

Hypothesis 2

There will be a significant difference between Treatment Group 1 and Treatment Group 2 for the change in cigarette intake over the five-week period.

Statistical Findings and Analysis

The data analysis began with the calculation of group totals and means for each week. Please refer to Table 5. The weekly progress charts were graphed (Figure 1).

By observing the graph, it is seen that both Group 1 and Group 2

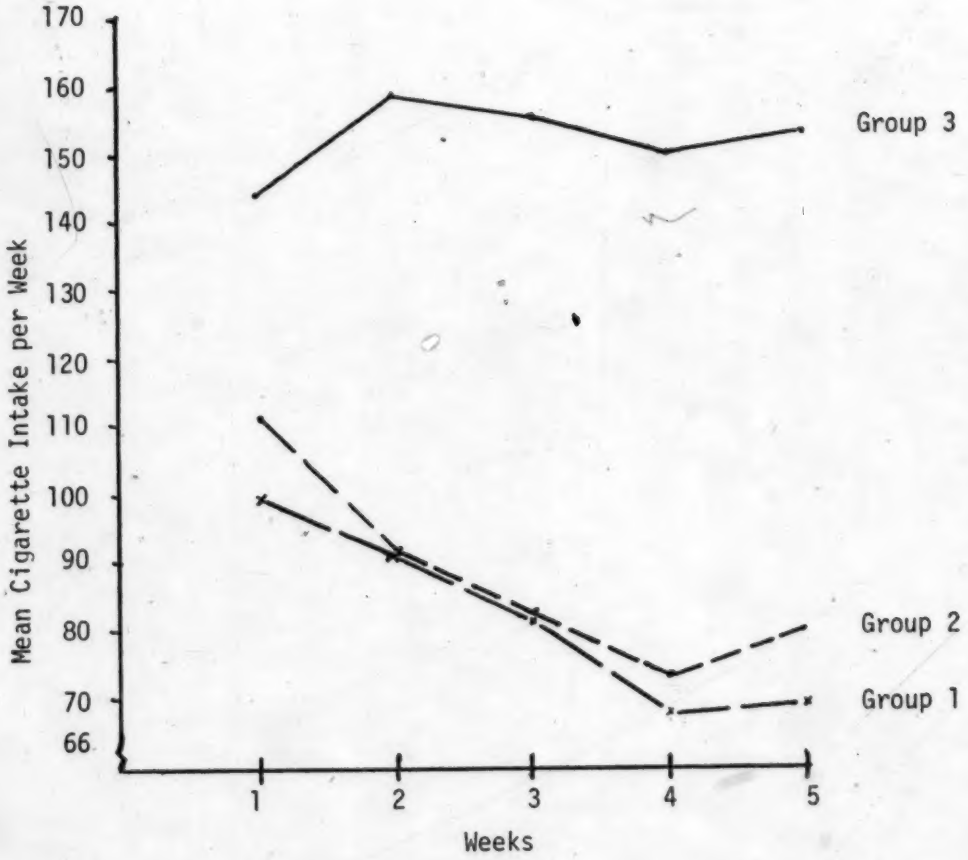

Fig. 1. Mean weekly cigarette intake by groups

Table 5

Group Totals and Means for Each Week of the Study

Group	Week				
	1	2	3	4	5
Treatment Group 1*	99.75	91.13	81.00	67.38	69.13
Treatment Group 2**	112.60	91.50	82.00	73.00	80.75
Control Group	144.90	159.60	156.60	150.60	153.80

*Highest to lowest hierarchy
**Lowest to highest hierarchy

steadily declined in weeks 1 to 4 and gained in week 5, with Group 2 increasing more. There was a divergence between Groups 1 and 2 in week 3, where the treatment varied for each of these groups.

Group 3 is represented as having increased in week 2 and showed a slight decline over weeks 3 and 4. This group also displayed a slight increase in week 5.

As mentioned previously, the subjects were assigned to groups on the basis of time availability. This lack of randomization may have been the cause of the spread which is evident in week 1 (initial baseline). Subsequently, it was decided to perform a one-way analysis of variance to ascertain if this difference was significant (Table 6). An $F(2, 21) = 2.04$ and $p > .05$ was obtained. It was concluded that there was no significant difference in the initial data.

In order to test the overall significance of differences between the treatment groups and the control, a two-way analysis of variance with repeated measures on factor 'B' (weeks) was used,

Table 6

Summary of One-Way Analysis of Variance
for Initial Data

Source of Variation	Sums of Squares	df	Mean Square
Between subjects	8645.58	2	4322.79
Within subjects	44484.26	21	2118.30

incorporating the "unweighed means" approach (Winer, 1971). Please refer to Table 7.

Table 7

Summary of Two-Way Analysis of Variance
with Repeated Measures on Factor 'B'

Source of Variation	Sums of Squares	df	Mean Square	F	P
Between Subjects	406781.00	23			
'A' main effects (Treatment)	125100.00	2	62550.00	4.66	0.02
Subjects within groups	281681.00	21	13413.38		
Within Subjects	26065.00	96			
'B' main effects (Time)	7877.50	4	1969.38	14.58	0.00
'A' x 'B' interaction	6841.00	8	855.13	6.33	0.00
'B' x Subjects within groups	11347.00	84	135.08		

There was an F (2, 23) = 4.66 and a significance level of .02 was achieved for the differences in the treatment which is the 'A' main effect. Further, there was a significant difference with the effects of treatment over weeks which was the main effect and the 'A' x 'B' interaction.

A Newman Keuls test was performed on the 'A' (groups) variable in order to obtain those pairs of means which could be considered statistically

different. Please refer to Table 8.

Table 8

Newman Keuls Test with Total Group Means for 'A' Variable (Groups)

Groups		1	2	3
	Means	81.68	87.98	153.10
1	81.68	---	6.30	71.42*
2	87.98		---	65.12**
3	153.10			---
r =			2	3
$S_{\bar{B}}$ p.95(r, 21)			54.01	65.55

*Significant
**Approaching significance

Table 8 shows that Group 3 (control) cigarette intake was significantly different from Group 2 at the .05 level and approaching significance from Group 1. Group 1 and Group 2 were not significantly different, evidenced by the results in the Newman Keuls test.

The Newman Keuls test uses the total group mean over all the weeks in arriving at the multiple comparisons. It was felt that this statistic was not sensitive to the decrement of each group over the treatment period and consequently a more specific test was chosen.

A nonparametric sign test for two correlated samples was used incorporating weekly totals for each individual (Ferguson, 1971, p. 328).

The weeks of primary concern for this study were 1, 3, 4 and 5. Week 1 compared to week 5 enabled an overall view of the decrement in cigarette consumption for each group, whereas by comparing week 3 with week 4 and with week 5, as well as week 4 with week 5, it was felt that some support for the hypothesis that the decrement was due in part to the treatment could be shown. Please refer to Table 9.

Table 9

Summary of Sign Tests for Correlated Samples

	Weeks 1 and 5		Weeks 3 and 4		Weeks 3 and 5		Weeks 4 and 5	
Group	z	p	z	p	z	p	z	p
1	2.47	.01	2.47	.01	1.77	.04	0.00	.00
2	2.47	.01	1.77	.04	1.06	.14	0.00	.00
3	.35	.36	0.00	.00	1.06	.14	0.00	.00

The control (Group 3) did not display any meaningful difference throughout the five-week period.

Group 1 (highest to lowest frequency hierarchical presentation) displayed a significant difference for all weeks compared, with the exception of week 4 with week 5. This weekly comparison resulted in a $z = 0$.

Group 2 (lowest to highest frequency hierarchical presentation) displayed significance for only two comparisons: week 1 with 5 and week 3 with 5. Week 3 with 5 displayed a significance level of $p > .05$ which cannot be considered significant and week 4 with 5 showed no

significance. It was in week 5 that an increment became evident; this increment was greater for Group 2 than either Group 1 or Group 3.

Although the sign tests indicate the change in cigarette consumption over the five-week period, these results do not permit direct comparison between groups. Consequently, a one-way analysis of variance was performed on the change from baseline week 1 to baseline week 5, resulting in an $F(2, 21) = 3.20$; $p < .05$ (Table 10).

Table 10

Results of One-Way Analysis of Variance for Mean Change in Cigarette Consumption Over Treatment Period

Source of Variation	Sums of Squares	df	Mean Square
Between subjects	3496.99	2	1748.49
Within subjects	11646.64	21	554.60

Summary of Findings and Conclusions

There was a significant difference obtained between the treatment groups and the control as displayed by a two-factor analysis of variance with repeated measures on factor 'B' (weeks). An $F(2, 23) = 4.66$ and p of .02 was obtained for the treatment variable, comparing the control group with the combined treatment groups. Further, there was a significant effect of the variable of time on the change in cigarette consumption; when the interaction of the treatment over time was calculated, a high level of significance was evident: $F(8, 84) = 6.33$; $p = .00$).

A Newman Keuls test for multiple comparisons on the treatment

variable resulted in a significant difference between Groups 1 and 3 and approaching significance between Groups 2 and 3. There was no significant difference between Groups 1 and 2.

Although the results of the above tests showed some differences between groups, it is nonetheless difficult to state definitely whether these differences were in fact due to the effect of the covert sensitization. There was a noticeable difference between groups in the initial baseline measures and although these differences were not significant - $F(2, 21) = 2.04$; $p > .05$ - it does have an effect on the overall measure of change between groups.

In order to measure the separate group changes over the five-week period, sign tests for two correlated samples were computed. The results were that Group 3 did not change significantly for any of the weeks compared. Of the four weekly comparisons, Group 1 showed significance on three comparisons, whereas Group 2 showed only two of the four weekly comparisons as significant.

A direct comparison of the changes over time between all three groups was also necessary to determine if there was significant change over time. A one-way analysis of variance was calculated on the differences between week 1 and week 5 (Table 10). This statistic resulted in a significant difference between groups over the entire length of this study: $F(2, 21) = 3.20$; $p < .05$.

In summary, by combining all the findings and the analyses, it was apparent that there was a change in cigarette consumption over the five-week period in the treatment groups and this change was not evident in the control group. Consequently, Hypothesis 1 is accepted.

There was no significant difference between the treatment groups, Groups 1 and 2, according to the analysis performed. Therefore, Hypothesis 2 cannot be accepted on the results of the findings of this study.

CHAPTER V

IMPLICATIONS AND DISCUSSION

It is the purpose of this chapter to bring some closure to the present study and will include a brief summary of the preceding four chapters, as well as discussing some of the limitations which were evident and led to suggestions for further research.

The present study had as its primary objective the investigation of the effect of covert sensitization on the behavior of cigarette smoking. The study was conducted over a five-week period and included 12 sessions. There were three groups, each consisting of eight subjects which were elicitedin various ways. Group 3 represented the control group and the subjects utilized the Daily Cigarette Intake Form (Appendix A) to count their cigarette intake for the entire five weeks.

Groups 1 and 2 received three relaxation sessions and seven covert sensitization sessions over the length of treatment. The treatment for these groups were similar until week 3 where different hierarchies consisting of nine smoking situations and seven aversive elements were presented. A total of 126 scenes were presented to each of Groups 1 and 2 (52 Aversive, 37 Aversive Relief, and 37 Averted) (Table 4).

The different hierarchies which were used involved presentation of situations in which the subjects indulged in the behavior to a greater or lesser degree. The hierarchy for Group 1 was a most to least hierarchy whereby the situation which the subjects indulged in to a greater extent was presented first and finally over the sessions the situation which constituted a low frequency situation was presented.

The opposite to this was a least to most frequent hierarchy which was presented to Group 2.

The results and corresponding statistical analysis were calculated and led to the acceptance of the hypothesis that covert sensitization was in fact effective in the treatment of cigarette smoking. The acceptance of this hypothesis was based on the results of a two-way analysis of variance using Time and Treatment as variables (Table 7). It was further supported by a significant difference obtained in a one-way analysis of variance for the change of cigarette smoking between week 1 and week 5 for all three groups (Table 10).

The hypothesis that there would be differences between the two treatment groups (Groups 1 and 2) due to the different hierarchical presentation was not supported by the findings of the present study.

Limitations

A wise man once said of studies:

> Crafty men condemn studies, simple men admire them, and wise men use them; for they teach not their own use; but that is a wisdom without them and above them, won by observation. Read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider.
>
> (Francis Bacon, "Of Studies", 1597)

A wisdom won by observation is perhaps the most paramount result of this present study. The author gained insight into the difficulties of researching a topic, both from a personal "ego" point of view and from a scientific point of view. Initially it was disheartening to discover that this study resulted in so many limitations, but with the passage of time these limitations became something which increased the awareness

and knowledge of the author.

It is now possible to discuss these limitations which would be altered if this study was performed again by the author. Some of the limitations were unavoidable, whereas others were due to lack of sufficient research in the area of covert sensitization and still others were caused by naivete of the investigator.

The most paramount and troublesome limitation was lack of random selection of subjects into groups. When a study lacks random sampling, it is difficult to generalize the findings of the study to a population at large.

Lack of randomization was perhaps the reason the initial starting data were so varied. This difference in the beginning prevented any definite conclusive statement to be formulated about the comparisons of the final differences found in Week 5.

In defense of the study, the author found it impossible to randomly assign subjects to groups because of the amount of time which was required of the subjects. It was necessary for subjects to begin the study on the designated date and continue to be available for three sessions a week for three weeks. It was therefore necessary to assign subjects to groups on the basis of time availability and not randomly.

A limitation which was the result of little appropriate research in covert sensitization was that of no measure of reliability and validity on the instruments used. Two of the instruments used were adaptations from other instruments (Fear Inventory, Personal History Questionnaire). Because these questionnaires were tailored for the purposes of this study, the measure of reliability and validity was not accurate.

Two other instruments utilized were constructed specifically for the purposes of the present study. The reason these newly constructed instruments were necessary was due to insufficient research in using questionnaires in the treatment of smokers by covert sensitization. As mentioned in Chapter II, questionnaires can be a very useful technique for gathering necessary information and there are specific questionnaires for eating patterns (Wollersheim, 1970) but none specific to smoking behavior.

Another major limitation was the limited sample size, which consequently resulted in the use of only three small groups as opposed to five larger groups. One of the additional groups could have been utilized as a placebo control in that they met as a group but did not receive any treatment. The second group could have received only the covert sensitization treatment and not be introduced to the relaxation segment and the suggestion given in the second week to drop one cigarette a day (noncumulative).

As in the randomization limitation, this small sample size was also a result of the time investment required. If the treatment was, for example, a weekend "crash" treatment, then perhaps more subjects would have volunteered.

This small sample size did in part affect the conclusions which may have been drawn from this study. The effect, however, is unmeasurable and a suggestion for further research is necessary.

Although the groups which did receive the treatment showed a change in the behavior of cigarette smoking in the direction of a decrement, it is recommended by the author that a follow-up period should have been

included in this present study.

There was no follow-up; however, through personal contact with the only subject who achieved a complete cessation of the behavior, it was ascertained that the subject did maintain a zero behavior pattern. Interestingly enough, this subject quit after the first three sessions of covert sensitization but continued to come to the remaining four. This would lend support to Cautela's suggestion to continue treatment after zero target behavior had been achieved (1970).

The fact that the above mentioned subject quit after three sessions brings out perhaps another limitation of the present study: lack of motivational information. The subjects were requested to complete both Walsh's General Cigarette Survey and the Personal History Questionnaire which alluded to some motivational aspects (i.e., Why do you want to quit smoking? Walsh's General Cigarette Survey, Appendix D) but were designed for this specific purpose.

It was hypothesized a posteriori that perhaps motivational levels should have been determined as this aspect may have been another reason for the differences in the initial baseline as well as a possible reason why the control subjects could or did not make themselves available at the specified times. Motivational levels may have also been evident in the reason that none of the control subjects took the opportunity presented for them to receive individual treatment upon completion of the present study. Perhaps it is necessary to treat the behavior at the time the client feels ready and not delay treatment.

One other possible limitation which became evident throughout the study was that of group treatment. Although it was necessary to utilize

a group design because of the empirical nature of this study, it may have lacked effectiveness for some individuals.

Again the question of individuality and specificity can be raised; even though an attempt was made to keep the effects of these areas at a minimum, the possibility of the depressing of the overall effectiveness of the program cannot be ignored.

It was a subjective feeling of the investigator that some subjects had difficulty with the generality of the scenes presented. Some subjects expressed feelings that the scenes were too noxious, whereas others felt they were insufficiently aversive. Consequently, it is suggested that further research enabling direct comparisons between groups as opposed to individual treatment be undertaken as this is apparently a very important aspect of covert sensitization.

In summary, it was the personal feeling of the investigator that this study was effective in the treatment of cigarette smoking and more statistically significant results could have developed if some of the aforementioned limitations were corrected and adjusted.

If nothing else, at least this study resulted in a learning experience for the investigator, as well as an interesting experience for the subjects involved. The author believes that it was a worthwhile exercise and had she to do it all again, there would be changes but perhaps still there would be limitations as it is a question of "Is there ever really a perfect study investigating psychological dimensions of the human being?"

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APPENDIX A

DAILY CIGARETTE INTAKE FORM

Daily Cigarette Intake

Name: Date:

Total smoked today _____

TIME	PLACE	AMOUNT
A.M.	Before breakfast	_____
	After breakfast	_____
	Before break	_____
	During break	_____
	After break	_____
P.M.	Before lunch	_____
	After lunch	_____
	Before break	_____
	During break	_____
	After break	_____
Evening	Before supper	_____
	After supper	_____
Late Evening (Describe the situations where you smoked and how many)	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

Other times not listed and how many

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

APPENDIX B

PERSONAL HISTORY QUESTIONNAIRE

The purpose of these questionnaires is to obtain a comprehensive picture of your background and information about the habit of smoking. In scientific work, records are necessary, since they permit a more thorough dealing with one's problems. By completing these questionnaires as fully and as accurately as you can, your therapeutic program will be facilitated as will my study.

It is understandable that you might be concerned about what happens to the information about you. Nobody but myself will be able to see your questionnaires and the information is confidential.

PERSONAL HISTORY QUESTIONNAIRE

If you do not desire to answer any questions, merely write "Do not care to answer".

Date:

1. General

Name:

Address:

Telephone Numbers: Home: Office:

Age: Occupation:

How did you find out about this treatment:

With whom are you living now? (list people)

Marital status (circle answer)

single engaged married remarried separated divorced widowed

2. Marital History

How long have you been married?

Husband's/wife's age:

Occupation of husband/wife:

Personality of husband/wife (in your own words):

In what areas are you compatible?

In what areas are you incompatible?

How many children do you have?
(Please list their sex and age)

3. Personal Information

Underline any of the following that apply to you:

Headaches	Suicidal ideas
Nightmares	Memory problems
Feel tense	Inferiority feelings
Depressed	Concentration problems
Unable to relax	Fainting spells
Can't make friends	No appetite
Can't keep a job	Insomnia
Financial problems	Take drugs
Miss my family	Shy with people
Dizziness	Can't make decisions
Fatigue	Home conditions bad
Take sedatives	Unable to have a good time
Feel panicky	

Underline any of the following words which apply to you:

worthless, useless, a "nobody", inadequate, stupid, incompetent, naive, guilty, evil, horrible thoughts, hostile, full of hate, anxious, agitated, cowardly, unassertive, panicky, aggressive, ugly, repulsive, unattractive, depressed, lonely, unloved, misunderstood, bored, restless

worthwhile, sympathetic, intelligent, attractive, confident, considerate, friendly, a "nice guy", happy, contented, competent, good thoughts, calm, handsome, brave, assertive, loved, lots of friends

Others:

Present hobbies, interests, and activities:

How is your free time occupied?

What things make you feel happy, contented?

List your likes:

APPENDIX C

FEAR INVENTORY

Fear Inventory

The items in this questionnaire refer to things and experiences that may cause fear or other unpleasant feelings. Put a check mark in the column as to how each affects you at this time in your life.

	Not at all	A little	A fair amount	Much	Very much
1. Noise of vacuum cleaners					
2. Open wounds					
3. Being alone					
4. Being in a strange place					
5. Dead people					
6. Loud voices					
7. People who seem insane					
8. Falling					
9. Being teased					
10. Thunder					
11. Sirens					
12. Failure					
13. High places on land					

	Not at all	A little	A fair amount	Much	Very much
14. Looking down from high buildings					
15. Worms					
16. Imaginary creatures					
17. Strangers					
18. Bats					
19. Flying insects					
20. Sudden noises					
21. Crowds					
22. Cats					
23. Tough looking people					
24. Birds					
25. Sight of deep water					
26. Dead animals					
27. Dirt					
28. Crawling insects					

	Not at all	A little	A fair amount	Much	Very much
29. Ugly people					
30. Fire					
31. Sick people					
32. Dogs					
33. Being criticized					
34. Strange shapes					
35. Being in an elevator					
36. Angry people					
37. Mice					
38. Blood: (a) human (b) animal					
39. Enclosed places					
40. Airplanes					
41. Being rejected					
42. Medical odors					
43. Feeling disapproved of					

	Not at all	A little	A fair amount	Much	Very much
44. Harmless snakes					
45. Cemeteries					
46. Being ignored					
47. Darkness					
48. Lightning					
49. Doctors					
50. Making mistakes					
51. Looking foolish					
52. Losing control					
53. Fainting					
54. Becoming nauseous					
55. Spiders					
56. Sight of knives or sharp objects					
57. Becoming mentally ill					
58. Taking written tests					

	Not at all	A little	A fair amount	Much	Very much
59. Being touched by others					
60. Feeling different from others					

APPENDIX D

WALSH'S GENERAL CIGARETTE SURVEY

Walsh's General Cigarette Survey

Please answer each of the questions as accurately as possible. If you should choose not to answer, please put a slash (/) where applicable.

Date:

Name:

Address:

Telephone: Home: Office:

Age:

Occupation:

1. History

(a) I began smoking at age _____

(b) I smoked how many cigarettes then? _____

(c) I smoked (please underline that which applies to you)

(i) because my friends did

(ii) because I was curious

(iii) I thought I was a "big shot"

(iv) I was nervous, anxious, scared

(d) Where did you begin smoking?

(e) Did your parents know you smoked? _____Yes _____No

(f) If yes, did they approve? _____Yes _____No

(g) If your parents did not know you smoked, how long did it take them to discover your smoking?

(h) How long was it before you began to smoke in front of them?

_____years _____months _____days

2. Present

(a) I have been smoking _____ years.

(b) I smoke _____ cigarettes per day.

(c) I smoke _____ brand of cigarettes.

(d) I smoke when I am (please underline that which applies to you)

bored tired busy frightened angry happy contented

(e) Do the people you work with smoke on the job? _____Yes _____No

(f) Do the people you live with smoke? _____Yes _____No _____How much?

(g) How many times have you attempted to seriously quit smoking?

(h) Why do you feel you did not successfully quit smoking?

(i) Have you ever sought help from an agency, etc. to quit?

_____Yes _____No

(j) Why do you want to quit smoking (be specific)?

(k) Are there any other people around you who want you to quit?

_____Yes _____No

If yes, who?

Please fill in how many cigarettes you smoke at the times and places listed below. If you smoke none at these times, then please describe other times that you do smoke. Please be as honest and accurate as you possibly can.

Place	Time	How Many Per Day
At mealtime: before meal	Breakfast	
	Lunch	
	Supper	
after meal	Breakfast	
	Lunch	
	Supper	
Coffee-time	Morning	
	Afternoon	
During work	Morning	
	Afternoon	
Evening (at home)	6:00-9:00 p.m.	
	9:00-12:00 p.m.	
In bed		
At bar or lounge	When by self	
	With small crowd (friends 2-4)	
	With large crowd (friends 4+)	
	With strangers	

Place	Time	How Many Per Day
At parties	When by self	
	Talking with one other person	
	Talking in small groups (2-4)	
	Talking in large groups (4+)	
Conversing with people during the day	With friends	
	With strangers	

APPENDIX E

RELAXATION TRANSCRIPT

The Training Tape
(30 minutes duration)

Key: , will signify either a change in inflection or a very brief pause

. . . . (each . represents a one-second pause)

This is a relaxation training tape . . for new clients, who have not previously experience relaxation.

Okay, would you just make yourself comfortable please, get in a comfortable position . . . . That's good. Just make yourself comfortable . . . getting your mood set, to let your whole body relax . . . . . .

It's important that we understand the difference, between relaxation and tension. We all know what it's like to be tense . . but sometimes we forget, what it's like to relax . . . . . So to compare the two, I'd like you to tighten your hands into fists . . Tighten them up just as tight as you can . . And notice the sensations in your hands, wrists, and forearms . . Feel the tightness in your knuckles . . Feel the shaking in your wrists . . and the tightness in your forearms . . That's tension! . .

Now gradually release your hands . . letting them relax more and more, letting all the tension flow out of your hands, and your wrists and your forearms . . Let your hands become completely relaxed . . . . . That sensation, that you feel in your wrists, in your forearms, in your hands, is what we will define, as relaxation . . . . . .

Let's tighten up once more . . Make your fists, tighten them up really tight, just as tight as you can . . Notice the tension in your forearms, feel the tightness in your muscles, your fingernails biting into your hands, the tension in your fingers . . and now let them relax . . Let your hands relax . . and your wrists relax . . and your forearms

relax . . Let all the muscles in your lower arms and hands, completely relax . . . Just let go . . and let the pleasant feelings of relaxation . . spread through your forearms and hands . . . . . I want you to go ahead letting those muscles relax more and more, as we concentrate on other parts of your body . . .

Think about your upper arms, and let those muscles relax, from your elbows up to your shoulders . . . just let them relax . . . The big biceps and the triceps . . . and all the other muscles of your upper arms, just let them go, and let them relax . . . becoming more relaxed and more relaxed . . . . . .

Now think about your upper back, from your shoulders across to your shoulder blades, from one shoulder across to the other and back again . . And let all those muscles in your upper back relax . . . Just turn each tension off. . Let each muscle relax completely . . As you let go . . letting all the muscles in your upper back . . . relax . . . .

Think about your upper chest . . From one shoulder across under your throat and back up to the other shoulder . . . and let all those muscles relax . . . Just let them go . . becoming more relaxed, and more relaxed as all the muscles in your upper chest . . relax . . . . . .

Think about your upper stomach . . and let all those muscles relax . . From your tummy round your hips to your backbone and back again, letting all the muscles in your upper abdomen become more relaxed, and more relaxed . . . . Just let them go . . turning off each muscle, and letting it relax even more . . So that all the muscles in your upper abdomen, are completely relaxed . . . . . .

Think about your lower stomach, and let all those muscles go . . . . From your lower stomach round to your hips, and up to your kidneys, and

back again . . let all of those muscles, relax . . . . Let them feel loose, and easy . . as you let all the muscles in your lower abdomen completely . . relax . . . Just let them go, becoming more relaxed and more relaxed, and more relaxed . . . . . .

Think about your thighs, from your hips and to your knees . . And let all the muscles in your thighs relax . . Along the tops of your thighs . . along the bottoms of your thighs . . letting all the muscles relax . . . . . Just let all the muscles in your thighs become completely loose, and easy, as you let them relax . . . . . .

Think about your lower legs, and let those muscles relax . . From your knees down to your ankles, all the muscles in your lower legs . . let them relax . . . . Let your calves relax . . Let the muscles along the sides of your shinbones relax . . So that all the muscles, in your lower legs are ever more relaxed . . Just let them go, and let them relax . . . . . .

Think about your ankles and feet, and let them relax . . . Let the relaxation spread, down the back of your heel, and out along the sole of your foot, to your arch, to the balls of your feet, right out to your soles of your toes . . . Let all the bottoms of your feet, relax . . . . Let the relaxation spread down the tops of your feet, from the forward part of your ankle, out across the top of your foot, to your toes again . . . so that your ankles and feet, are completely relaxed . . . . . Just let them go, becoming more relaxed, and more relaxed . . enjoying the pleasant feelings, of relaxation . . . . . .

Concentrate on relaxing, searching out any tensions, and letting them go . . becoming ever more relaxed . .

Think about your lower legs, and relax them even more . . . . . Think about your upper legs, from your knees to your thighs, and let them relax even more . . . . . Think about your lower stomach, round back to your kidneys, and your hips, and let all of that area, relax even more . . . . . Let the relaxation move up your spine, from your tailbone, up each vertebra, becoming more and more relaxed . . right up to your neck, to the base of your skull . . . Letting your whole back relax completely . . . . . .

Now think about your upper trunk, your stomach, your chest . . and let it relax even more . . . so very relaxed, enjoying the pleasant feelings, of relaxation . . .

Think about your neck . . Let all the muscles in your neck relax . . . . from your chin, down to your throat, to your chest . . . from your ears to your shoulders . . . from the base of your head down to your back . . .

Let all the muscles in your throat, relax . . . becoming more relaxed . . and more relaxed . . . Think about your face . . and let it relax . . .

Concentrate on your lower jaw, from one ear, down to your chin, and up to your other ear . . Let all the muscles, of your lower jaw, relax . . . Just let them go, and let them, relax . . . .

Think about your lips . . and let them relax . . . So that all the muscles round your lips, are loose, and easy . . as you let them relax . . . . . Go now to your cheeks . . from one cheek, up across your nose, and down the other side, to the other cheek, and let that area of your face relax . . so that your face is becoming very relaxed, feeling very

loose, and very easy . . . . .

Think about your forehead, and let all the muscles in your forehead relax . . . . from your eyebrows, right up to your hairline . . Let all those muscles relax . . so that your forehead becomes more relaxed, and more relaxed . . Just let it go, and relax . . . .

Think about your eyes, and let all the muscles round your eyes relax . . Let your eyelids relax . . Let your eyeballs relax . . so that all the area around your eyes, is becoming more relaxed, and more relaxed . . . . .

Let that relaxation spread up over your forehead, through your scalp, and back down to the back of your neck . . with your whole head, becoming completely relaxed . . .

Search out any tensions in your muscles, and let them go . . Just let all the muscles in your head completely relax . . . . . .

While you're becoming even more relaxed, feeling so very relaxed, enjoying the pleasant feelings, of relaxation, I'd like you to imagine yourself standing beside a long, black wall . . . . Down at the far end of this long, black wall you can see a number 10 . . and beside you is a number 1 . . . . . In a moment I am going to ask you to imagine yourself moving to number 10, passing each number along the way, becoming more relaxed and more relaxed . . Until by the time you reach number 10 you will be more relaxed than you are now, feeling very, very relaxed. All right, I'd like you to start moving toward number 10, and as you pass each number, you will feel more relaxed . . and more relaxed . . and more relaxed . . so very relaxed . . getting closer to 10 . . more relaxed . . . and more relaxed . . Just let yourself go, and relax . . .

So very relaxed . . enjoying the pleasant feelings, of relaxation . . . .

I'd like you to erase that scene from your mind now, and relax . . enjoying the good feelings . . of being very, very, relaxed . . . . . .

Now I'd like you to imagine another place, at another time . . It's summer . . I'd like you to think back . . to some special place that you once were, maybe as a child, or some other time, a place where you could go, be alone with nature and relax . . . Find that place in your memories, and go there now . . . . It's a nice day . . soft breeze . . It's good to be alive . . . . You'll enjoy being there . . It's your special place . . . . . Find a spot to stretch out, relax, in your special place . . . . Imagine yourself there now . . . enjoying the good feelings, of being, in your special place, on this perfect day . . . . . Just let yourself go . . and relax even more . . . Feeling safe, and secure, and so very good . . . . . just relax . . . . so very relaxed . . . . . more relaxed than you've ever been . . . so very relaxed . . . enjoying the pleasant feelings . . of relaxation . . . . . .

Erase that scene from your mind now . . . and relax . . . feeling very relaxed . . . very, very, comfortable . . . .

Now I want you to imagine your brand of cigarettes, you are relaxed, so very relaxed . . . . Imagine the package, you can see the color and the writing on the package . . . . Whenever I say "cigarette" you will be able to imagine the braind of cigarette you smoke and will see the package clearly . . . . I want you to erase that image from your mind now . . . . You are relaxed, feeling good and relaxed . . Let every tension out and relax . . . . . .

Now try to imagine yourself at a party . . remaining relaxed, so very

relaxed and calm . . Imagine the people at the party, their faces and what they are doing . . Try to imagine it as clearly and as vividly as you possibly can . . . . Whenever I say "You are at a party" you will be able to imagine this scene as clearly as you have right now . . . . I want you to erase that scene from your mind now and relax . . . . let all the tension go and just relax . . . . Let your whole body relax . . . .

Imagine yourself at home for an evening, remaining very relaxed and calm . . . Imagine yourself spending the evening the way you usually do . . Imagine the room, and who is there . . Try and imagine it as clearly and vividly as you possibly can . . . . Whenever I say "You are at home in the evening" you will be able to imagine the scene as vividly and as clearly as you have right now . . . . . Now I want you to erase that image from your mind now and relax . . Just relax . . You are so very relaxed and calm . . . Let your whole body relax . . .

You can be as relaxed, any time you like, by making yourself, very comfortable, in a comfortable place . . letting your whole body relax . . and by taking four deep breaths . . and when you reach the fourth breath . . you will be deeply relaxed . . . . I'd like you to do that with me in a minute . . imagining yourself, letting every last tension out of your body, as you exhale each breath . . . We're going to take four deep breaths . . and when you reach the fourth breath,.you will be deeply relaxed . . Okay, here we go . . .

One . . . and relax . . so very relaxed . . and Two . . .

and relax . . . so relaxed . . and Three . . . and relax

. . enjoying the pleasant feelings of relaxation . . .

and Four . . . relax . . . feeling very relaxed . . so

completely relaxed . . feeling very safe, very good, and very relaxed . . .

You can be as relaxed, as you are right now, by taking four deep breaths, and relaxing, just as you have done . . . .

Now we're going to go back to complete awareness . . I'm going to count backwards, from Four to One . . and when I reach One, you will be wide awake, completely alert . . feeling very good . . Okay, here we go . .

Four . . Three, things are getting lighter . . Two, things are getting lighter still . . and One, and you're wide awake, and everything is fine.

APPENDIX F

HIERARCHICAL SITUATIONS AND CORRESPONDING AVERSIVE SCENES

There were nine situations which were common to each group. These situations were:

	Situation	Group 1	Group 2
High frequency	Drinking in the pub	9	1
	At a party	8	2
	In the evening at home	7	3
	After the evening meal	6	4
	During coffee break	5	5
	During work or studying	4	6
	Driving in the car	3	7
	Before lunch or supper	2	8
Low frequency	In the morning before breakfast	1	9
		(M)	(L)

These situations were ordered from a high frequency situation to a low frequency situation. Group 1 received the hierarchy presentation from most to least which was situation 9 (Pub) to situation 1 (Before breakfast). Group 2 received the hierarchy from least to most, situation 9 (Before breakfast) to situation 1 (Pub).

For each situation there were three types of scenes constructed: Aversive, Aversive Relief and Averted.

Each tape consisted of various combinations of these scenes determined by which mode of presentation was being used. At the beginning of each daily tape, the following passage was read before the scenes were presented:

> Try to feel as though you are actually in the scenes to be presented. Concentrate on all the details. Imagine the things you would see or hear. Pay attention to any feelings of touch or movement. Just let yourself go. Let yourself feel as though the scenes are really happening. Ready now . . .

The situations and types of scenes follow. The letters and numbers which are in the heading are the classification of the situation according to hierarchy group. Group 1 is the most to least and therefore designated (M); Group 2 is least to most and therefore designated (L).

The order in which the situations are presented henceforth is the order of presentation similar to Group 1's, and subsequently reversed for Group 2.

Pub (M9, L1)

Aversive

You are sitting in your favorite pub enjoying a drink. You have your friends around you. Your package of cigarettes are there on the table beside you. As you reach for a cigarette you begin to feel queasy in your stomach. You open the package and the vomit wells up into your throat. You can taste the bitterness of it. As you open your mouth to put the cigarette into it, you puke your guts out all over everything. Your cigarette is green and soggy. The package of cigarettes has green chunks of puke on it. You look up at your friends and they are horrified.

Aversive relief

You are sitting in your favorite pub enjoying a drink. You have your friends around you. Your package of cigarettes is there on the table beside you. As you reach for a cigarette you begin to feel queasy in your stomach. You open the package and the vomit wells up into your throat. You can taste the bitterness of it. As you open your mouth to put the cigarette

into it, you puke your guts out all over everything. Your cigarette is green and soggy. The package of cigarettes has green chunks of puke on it. You look up at your friends and they are horrified. You get up and leave the puke and cigarettes. As you turn away you begin to feel better. There is fresh air and no longer the stench of puke. You go to the bathroom and clean up and you feel very refreshed and very good leaving the cigarettes behind you.

Averted

You are sitting in your favorite pub enjoying a drink. You have your friends around you. Your package of cigarettes is there on the table beside you. As you reach for a cigarette you begin to feel queasy in your stomach. You decide not to have a cigarette and your feeling in your stomach disappears. Your friends all think it's great that you did not need that cigarette. You feel proud.

At a Party (M8, L2)

Aversive

You are at a party. All your friends are there. People are laughing and just enjoying themselves. You are sitting on a couch with someone you are attracted to. Your cigarettes are there in front of you. You just finished putting out a cigarette and turn to this attractive person. You go to kiss them and they violently push you away. This person tells you that they refuse to have anything to do with you. To kiss you would be like kissing an ashtray. You are mortified and your friends are laughing at you.

Aversive relief

You are at a party. All your friends are there. People are laughing and just enjoying themselves. You are sitting on a couch with someone you are very attracted to. Your cigarettes are there in front of you. You just finished putting out a cigarette and turn to this attractive person. You go to kiss them and they violently push you away. This person tells you that they refuse to have anything to do with you. To kiss you would be like kissing an ashtray. You are mortified and your friends are laughing at you. You throw the cigarettes out and go to wash out your mouth. When you return this person is then amiable to you because you no longer smoke.

Averted

You are at a party. All your friends are there. People are laughing and just enjoying themselves. You are sitting on a couch with someone you are very attracted to. Your cigarettes are there in front of you. You reach to have one and then decide that this attractive person may not be impressed with this filthy habit. You decide not to have one and the attractive person is pleased with you. You are contented without the cigarette.

Evening (M7, L3)

Aversive

You and your family or friends are sitting around the living room watching TV. It's just an enjoyable evening at home. Your cigarettes are there beside you. You decide to have a cigarette and as you do you feel very tense and a fear comes over you. As you touch the packet, the

fear overwhelms you. When you open the package, bugs come crawling out at you. You put the cigarette into your mouth. You realize it is covered with hundreds of larvae and eggs. You become sick and spit out the eggs and cigarette. Your friends/family are shocked.

Aversive relief

You and your family or friends are sitting around the living room watching TV. It's just an enjoyable evening at home. Your cigarettes are there beside you. You decide to have a cigarette and as you do you feel very tense and a fear comes over you. As you touch the packet, the fear overwhelms you. When you open the package, bugs come crawling out at you. You put the cigarette into your mouth. You realize it is covered with hundreds of larvae and eggs. You become sick and spit out the eggs and cigarette. Your friends/family are shocked. You turn away from the cigarettes and bugs. You begin feeling better. You leave the room and the fear passes. You feel calm again being away from the cigarettes and bugs.

Averted

You and your family or friends are sitting around the living room watching TV. It's just an enjoyable evening at home. Your cigarettes are there beside you. You decide to have a cigarette and as you do you you feel very tense and a fear comes over you. As you touch the packet the fear is overwhelming. You shake your head and decide you don't want a cigarette. The fear leaves you and you feel relaxed. Your friends/ family are happy you decided not to have a cigarette.

After Supper (M6, L4)

Aversive

You are sitting at the table after having enjoyed a pleasant meal. Your package of cigarettes is there besude you on the table. As you reach for a cigarette you feel very uneasy, like something is going to happen. You take a cigarette from the pack and the filter feels soggy. The uneasiness increases. You put the cigarette into your mouth and you feel frightened and queasy. There is something crawling throughout your mouth from the cigarettes. You spit the cigarettes out. There are slimy maggots crawling all over the cigarettes and your mouth.

Aversive relief

You are sitting at the table after having enjoyed a pleasant meal. Your package of cigarettes is there beside you on the table. As you reach for a cigarette you feel very uneasy, like something is going to happen. You take a cigarette from the pack and the filter feels soggy. The uneasiness increases. You put the cigarette into your mouth and you feel frightened and queasy. There is something crawling throughout your mouth from the cigarettes. You spit the cigarette out. There are slimy maggots crawling all over the cigarettes and your mouth. You jump up from the table. You wash your mouth out and it feels fresh. You feel better being away from the cigarettes and the maggots.

Averted

You are sitting at the table after having enjoyed a pleasant meal. Your package of cigarettes is there beside you on the table. As you reach for a cigarette you feel very uneasy, like something is going to

happen. You shake your head and decide not to have one. The uneasy feeling disappears. Your family/friends are happy you didn't want that cigarette.

During a Break (M5, L5)

Aversive

You are taking your break during the day. There are some people around you and you are all enjoying a cup of coffee. Your cigarettes are there beside you. You reach for the package and you feel frightened and queasy. As you open the package, little,ugly, crawling mice come out of the package. You become very frightened and sick. You put the cigarette into your mouth to light it. You feel something squirming around inside your mouth. You spit the cigarette out and notice that there are two pink, crawling mice in your mouth. You feel sick to your stomach and puke all over your cigarettes. You keep puking and mice keep coming up. The people around you are horrified and shocked.

Aversive relief

You are taking your break during the day. There are some people around you and you are all enjoying a cup of coffee. Your cigarettes are there beside you. You reach for the package and you feel frightened and queasy. As you open the package, little, ugly, crawling mice come out of the package. You become very frightened and sick. You put the cigarette into your mouth to light it. You feel something squirming around inside your mouth. You spit the cigarette out and notice that there were pink, crawling mice all over your mouth. You feel sick to your stomach and puke all over your cigarettes. You keep puking and

mice keep coming up. The people around you are horrified and shocked. You finally quit puking and turn away from the table. You begin feeling better. The air smells fresher. You go to the bathroom to clean up. You feel great away from the stench and from your cigarettes.

Averted

You are taking your break during the day. There are some people around you and you are all enjoying a cup of coffee. Your cigarettes are there beside you. You reach for the package and you feel frightened and queasy. You decide not to have a cigarette and the queasiness passes. The people around you congratulate you on your strong will.

Working/Studying (M4, L6)

Aversive

It's the afternoon and you are at work/studying. Your package of cigarettes is there beside you. As you reach for one you feel a sick feeling in the pit of your stomach. You can feel the puke well up into your mouth. As you put the cigarette into your mouth you puke your guts all over your desk, yourself and the cigarettes. You keep retching up green gobs of puke. (Your fellow workers are mortified.) There is a stench of puke. Your cigarettes are covered in vomit.

Aversive relief

It's the afternoon and you are at work/studying. Your package of cigarettes is there beside you. As you reach for one you feel a sick feeling in the pit of your stomach. You can feel the puke well up into your mouth. As you put the cigarette into your mouth you puke your guts

all over your desk, yourself and the cigarettes. You keep retching up green gobs of puke. (Your fellow workers are mortified.) There is a stench of puke. Your cigarettes are covered in vomit. You get up from your desk and you begin feeling better. The air is fresher being away from the cigarettes. You go to the bathroom and clean up. You feel great being away from the puke and your cigarettes.

Averted

It's the afternoon and you are at work/studying. Your package of cigarettes is there beside you. As you reach for a cigarette you feel a sick feeling in the pit of your stomach. You then decide not to have a cigarette and the feeling disappears. You feel good about yourself because you didn't need that cigarette.

In the Car Driving (M3, L7)

Aversive

You are in your car. It's enjoyable just driving around. You roll the window down to breathe the fresh air. You reach for a cigarette and the smell is overwhelming. You feel sick to your stomach. You put the cigarette into your mouth and it tastes like urine. You take the cigarette out and the filter is yellow and covered with shit.

Aversive relief

You are in your car. It's enjoyable just driving around. You roll the window down to breathe the fresh air. You reach for a cigarette and the smell is overwhelming. You feel sick to your stomach. You put the cigarette into your mouth and it tastes like urine. You take the cigarette

out and the filter is yellow and covered with shit. You throw the cigarettes out the window and the air feels fresher. It feels good not having the cigarettes.

Averted

You are in your car. It's enjoyable just driving around. You roll the window down to breathe the fresh air. You reach for a cigarette and the smell is overwhelming. You then decide not to smoke the cigarette and the air begins to smell better. You throw out the package of cigarettes and it smells refreshing in your car. You feel good that you didn't need that cigarette.

Before a Meal (M2, L8)

Aversive

You are waiting for lunch or supper to be cooked. You sit down and relax. You decide to have a cigarette while you are waiting. As you reach for a cigarette a sickening smell comes from the package. You feel nauseated. You put a cigarette into your mouth and it tastes putrid. You spit out the cigarette. There are gobs of feces all over the filter. You puke your guts out. The smell is unbearable.

Aversive relief

You are waiting for lunch or supper to be cooked. You sit down and relax. You decide to have a cigarette while you are waiting. As you reach for a cigarette a sickening smell comes from the package. You feel nauseated. You put a cigarette into your mouth and it tastes putrid. You spit out the cigarette. There are gobs of feces all over the filter.

You puke your guts out. The smell is unbearable. You get up and move away. The air smells fresher away from the cigarettes. You feel better.

Averted

You are waiting for lunch or supper to be cooked. You sit down and relax. You decide to have a cigarette while you are waiting. You smell a disgusting odor from the package and decide not to have a cigarette. The smell disappears. You feel good for not having that cigarette.

Before Breakfast (M1, L9)

Aversive

It's morning and you've just gotten up. You go to the table and decide to have a cigarette. As you reach for the cigarette you feel a tense, nervous feeling in your stomach. You notice black, hairy spiders crawling over your package of cigarettes. You become frightened but take a cigarette anyway. You put the cigarette into your mouth and you then realize that the black, hairy spiders are crawling over the cigarette. There are spiders crawling in your mouth, crawling all over your face and hands. You spit out the spiders and the cigarette.

Aversive relief

It's morning and you've just gotten up. You go to the table and decide to have a cigarette. As you reach for a cigarette you feel a tense, nervous feeling in your stomach. You notice black, hairy spiders crawling over your package of cigarettes. You become frightened but take a cigarette anyway. You put the cigarette into your mouth and you then realize that the black, hairy spiders are crawling over the cigarette.

There are spiders crawling in your mouth, crawling over your face and hands. You spit out the spiders and the cigarette. You get up and leave your cigarettes. The fear subsides. You go to the bathroom and wash out your mouth and your hands. The spiders are gone. You feel good that you left the spiders and cigarettes behind you. You are calm and relaxed now.

Averted

It's morning and you've just gotten up. You go to the table and decide to have a cigarette. As you reach for a cigarette you feel a tense, nervous feeling in your stomach. You decide you don't need a cigarette and the tightness leaves. You feel calm and contented without the cigarette.